CLAIMS

What is claimed is:

1. A solid biomaterial, characterized in that it essentially comprises:

(1) at least one solid support material consisting of at least one insolubilized dextran derivative of general formula $DMC_aB_bSu_cS_d$ in which:

D represents a polysaccharide chain, preferably consisting of successions of glucoside units,

MC represents methyl carboxylate groups,

B represents carboxymethylbenzylamide groups,

Su represents sulfate groups (sulfation of the free hydroxyl functional groups carried by the glucoside units),

S represents sulfonate groups (sulfation of the aromatic rings of the B groups),

a, b, c and d represent the degree of substitution (ds), expressed relative to the number of free hydroxyl functional groups in a glucoside unit of the dextran, respectively in MC, B, Su and S groups; a being ≥ 0.3, b being equal to 0 or ≥ 0.2, c being equal to 0 or ≥ 0.1 and d being equal to 0 or ≤ 0.15, provided that when b is equal to 0, c is not equal to 0, and

(2) at least one growth factor exhibiting activity on the osteoarticular, dental and/or maxillofacial tissues.

A biomaterial, characterized in that it essentially comprises:

2. The biomaterial as claimed in claim 1, characterized in that said insolubilized dextran derivative is such that d is equal to 0.

3. The biomaterial as claimed in claim 1 or claim 2, characterized in that said growth factor is selected from the group consisting of EGFs, IGFs, FGFs, TGF-βs, PDGFs and BMPs.

4. The biomaterial as claimed in any one of the preceding claims, characterized in that said growth factor has an osteoinductive activity and is a BMP.

5. The biomaterial as claimed in any one of the preceding claims, characterized in that it comprises several insolubilized dextran derivatives and/or several growth factors involved in the bone reconstruction process.

6. The biomaterial as claimed in any one of the preceding claims, characterized in that it is insolubilized by crosslinking with the aid of a crosslinking agent.

7. The biomaterial as claimed in claim 6, characterized in that said crosslinking agent is selected from the group consisting of sodium trimetaphosphate, epichlorohydrin, divinyl sulfone, gluteraldehyde and bisepoxiranes.

8. The biomaterial as claimed in any one of the preceding claims, characterized in that it exists in the form of a hydrogel.

9. The biomaterial as claimed in any one of claims 1 to 7, characterized in that it exists in the form of a freeze-dried powder.

10. The biomaterial as claimed in claim 9, characterized in that said freeze-dried powder is obtained from the hydrogel defined in claim 8.

11. The biomaterial as claimed in any one of the preceding claims, characterized in that it comprises, in addition, a tissue filling material.

12. The biomaterial as claimed in claim 11, characterized in that it coats particles of an inorganic or polymeric insoluble support, said particles having a diameter greater than 100 μm.

13. The biomaterial as claimed in claim 11 or claim 12, characterized in that said tissue filling material is selected from the group consisting of collagen, gelatin, biological

adhesive, polymers of polylactic or polyglycolic acids and copolymers of polyethylene glycol and polylactide-co-glycolide.

14. The biomaterial as claimed in claim 11 or claim 12, characterized in that said tissue filling material is an osteoconductive material selected from the group consisting of coral, hydroxyapatite, a mixture of collagen and hydroxyapatite, tricalcic calcium phosphate, calcium sulfate and calcium carbonate.

15. A process for preparing the solid biomaterial as claimed in any one of claims 1 to 11 and 13, characterized in that it comprises the following steps:

crosslinking of at least one dextran derivative of general formula $DMC_aB_bSu_cS_d$ as defined in claim 1 or claim 2,

adsorption, in the insolubilized dextran derivative obtained above, of at least one growth factor as defined in any one of claims 1 to 4,

production of a solid biomaterial according to any one of claims 1 to 8 in the form of a hydrogel,

optionally, the freeze-drying of said hydrogel in order to obtain said biomaterial in the form of a powder.

16. The process as claimed in claim 15, characterized in that said crosslinking of at least one dextran derivative of general formula $DMC_aB_bSu_cS_d$ is carried out with the aid of a crosslinking agent as defined in claim 6 or claim 7.

17. The process as claimed in claim 15 or claim 16, characterized in that the crosslinking of at least one dextran derivative of general formula $DMC_aB_bSu_cS_d$ is carried out in the presence of a tissue filling material.

18. The process as claimed in claim 17, characterized in that said tissue filling material is as defined in claim 13 or claim 14.

19. A process for preparing the biomaterial as claimed in claim 12, characterized in that it comprises the following steps:

bringing the dextran derivative into contact with particles of an inorganic or polymeric insoluble support, as defined in claim 12, so as to obtain a composite,

insolubilization of the composite obtained above, in the presence of a crosslinking agent,

adsorption, in the insolubilized composite obtained above, of at least one growth factor as defined in claims 1 to 4.

20. The use of the solid biomaterial as claimed in any one of claims 1 to 14 for the preparation of a repair or filling material for osteoarticular, dental or maxillofacial applications.

21. The use as claimed in claim 20 for the preparation of osteoarticular, dental or maxillofacial implants.

22. The use of a solid biomaterial as claimed in any one of claims 1 to 14 for the preparation of a coating for orthopedic, dental or maxillofacial prostheses.

23. A functionalized prosthesis, characterized in that at least part of its surface is coated with a solid biomaterial as claimed in any one of claims 1 to 14.